

REMARKS

Applicants respectfully request reconsideration of the present application in view of the reasons that follow.

I. Amendments and Status of the Claims

Claims 2-4 and 7-9 are requested to be cancelled without prejudice or disclaimer.

Claims 1, 5, and 6 are requested to be amended. The amendments to claims 1 and 6, *inter alia*, recite that the gate is switched in both a pseudo-random binary sequence (PRBS) and in a bit-flipped PRBS. In addition, the amendments recite that respective analyzing matrices are produced for PRBS and the bit-flipped PRBS and that the output data sets are combined with these matrices to produce a system output with reduced noise. Support for these amendments can be found throughout the specification as filed, including page 2 of the specification, and in the cancelled claims.

Upon entry of this response, therefore, claims 1, 5 and 6 will be pending and subject to examination on the merits.

II. Claim Rejections – 35 U.S.C. § 102(b)

Claims 1, 3, 4, 6, 8 and 9 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by U.S. Patent. No. 6,300,626 to Brock. Office Action at ¶¶ 2-5. Applicants respectfully traverse this ground of rejection.

Brock does not teach or suggest the use of bit-flipping to improve the signal to noise ratio, as claimed. Generally, Brock relates to a time of flight mass spectrometer having an increased duty cycle. Brock teaches that a pseudorandom binary sequence can be used to control the gate. However, nothing in Brock suggests using both a both a pseudo-random binary sequence (PRBS) and in a bit-flipped PRBS to reduce noise, as claimed. Because Brock does not teach using both PRBS and bit-flipped PRBS to reduce noise, Brock cannot anticipate the claimed invention.

For at least these reasons, Applicants respectfully request reconsideration and withdrawal of this ground of rejection.

III. Claim Rejections – 35 U.S.C. § 103

Claims 2, 5, and 7 stand rejected under 35 U.S.C. § 103 as allegedly obvious over U.S. Patent No. 6,300,626 to Brock in view of U.S. Patent No. 7,067,803 to Zare. According to the Examiner, Brock fails to disclose the use of an IMS detection system, and Zare is cited to remedy that deficiency. Office Action at ¶¶ 8-10. Applicants respectfully traverse this ground of rejection.

Brock in view of Zare fails to render obvious the claimed invention for the same reasons that Brock fails to render obvious the claimed invention. Generally, Brock does not teach or suggest switching the gate in both a PRBS and in a bit-flipped PRBS to reduce system noise. Zare, which is cited only to show ion gating in IMS, does not remedy this deficiency.

The Examiner states that “it is well known in the art to use bit flipping in pseudorandom generators to correct changes from a ‘1’ state to a ‘0’ state.” Office Action at ¶ 13. Even assuming *arguendo* that this is correct, Brock and Zare lack any teaching that PRBS and bit-flipped PRBS matrices both be produced and combined by matrix algebra with output data sets in the manner required by the amended claims.

For at least these reasons, Applicants respectfully request reconsideration and withdrawal of this ground of rejection.

CONCLUSION

Applicants believe that the present application is in condition for allowance. Favorable reconsideration is requested, therefore. Also, Examiner Johnston is invited to contact the undersigned directly, should any issue warrant further consideration.

The Commissioner is hereby authorized to charge any additional fees, which may be required regarding this application under 37 CFR §§ 1.16-1.17, and to credit any overpayment to Deposit Account No. 19-0741. Should no proper payment accompany the response, then the Commissioner is authorized to charge the unpaid amount to the same deposit account. If any extensions of time are needed for timely acceptance of submitted papers, Applicants hereby petition for such extension under 37 CFR §1.136 and authorize payment of any such extensions fees from the deposit account.

Respectfully submitted,

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By



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